



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/594,562	09/27/2006	Tunenobu Kimoto	295885US3PCT	4707
22850	7590	09/24/2007	EXAMINER	
OBLON, SPIVAK, MCCLELLAND MAIER & NEUSTADT, P.C. 1940 DUKE STREET ALEXANDRIA, VA 22314			BERNARD, VIJI	
			ART UNIT	PAPER NUMBER
			1763	
			NOTIFICATION DATE	DELIVERY MODE
			09/24/2007	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

patentdocket@oblon.com
oblonpat@oblon.com
jgardner@oblon.com

Office Action Summary

Application No.

10/594,562

Applicant(s)

KIMOTO ET AL.

Examiner

Viji N. Bernard

Art Unit

1763

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 17 August 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 7-16 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 7-16 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 09/27/2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>09/27/2006</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 7-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S.

Patent No: 6,217,662 B1 to Kong et al in view of Japanese Patent No: 03-131017 to Satoyasu.

Regarding Claim 7, Referring to Fig (1, 2, 4, 6, 7) Kong et al teach a susceptor (42 in Fig. 2, 50 in Fig.6) that is used in semiconductor epitaxial growth, comprising: a barrel type susceptor (42 in Fig. 2, 50 in Fig.6) having a plurality of surfaces (43 in Fig.2, 55 in Fig. 7) on an outer side of each of which a plurality of substrates (see Fig. 2, plurality of wafer pockets 44 for

holding the substrates, 56, wafer pockets in Fig.7 and Fig.1 shows disc shaped wafers (27)) is freely disposed;

But Kong et al fail to teach that a member that has the barrel type susceptor disposed inside thereof and surfaces each of which is oppositely disposed tilting in a same direction as each of the surfaces of the barrel type susceptor.

However, Satoyasu teaches that a member (8b, second susceptor) that has the barrel type susceptor disposed inside thereof and surfaces each of which is oppositely disposed tilting in a same direction (see Drawing 1) as each of the surfaces of the barrel type susceptor for the purpose of eliminating the influence of convection of a raw material distribution of film thickness and composition of a growth film on the inside surface (Abstract, purpose and constitution).

Thus, it would have been obvious to one of ordinary skill in the art at the time applicant's claimed invention was made to have provided a member that has the barrel type susceptor disposed inside thereof and surfaces each of which is oppositely disposed tilting in a same direction as each of the surfaces of the barrel type susceptor in Kong et al in order to eliminating the influence of convection of a raw material distribution of film thickness and composition of a growth film on the inside surface as taught by Satoyasu.

Regarding Claim 8, Referring to Fig (1, 2, 6, 7) Kong et al teach that each of surfaces on a side of the barrel type susceptor of the member allows placing a plurality of substrates (see Fig. 2, plurality of wafer pockets 44 for holding the substrates, 56, wafer pockets in Fig.7 and Fig.1 shows disc shaped wafers (27)).

Art Unit: 1763

Regarding Claim 9, Referring to Fig (2) Berkman et al teach that either one or both of the barrel type susceptor and the member are a heater (46) (Col. 4, Line 59-61).

Regarding Claim 10, Referring to Fig (2, 4, 6, 7) Berkman et al teach that the susceptor is made of a base material containing graphite (Col. 6, Line 10-24).

Regarding Claim 11, Referring to Fig (2, 4, 6, 7) Berkman et al teach that the susceptor is covered with polycrystalline silicon carbide or polycrystalline tantalum carbide (Col. 6, Line 10-24).

Regarding Claim 12, Referring to Fig (1, 2, 4, 6, 7) Kong et al teach a susceptor (42 in Fig. 2, 50 in Fig.6) that is used in semiconductor epitaxial growth, comprising: a barrel type susceptor (42 in Fig. 2, 50 in Fig.6) having a plurality of surfaces (43 in Fig.2, 55 in Fig. 7) on an inner side of each of which a plurality of substrates (see Fig. 2, plurality of wafer pockets 44 for holding the substrates, 56, wafer pockets in Fig.7 and Fig.1 shows disc shaped wafers (27)) is freely disposed;

But Kong et al fail to teach that a member that has the barrel type susceptor disposed at the peripheral portion thereof and surfaces each of which is oppositely disposed tilting in a same direction as each of the surfaces of the barrel type susceptor.

However, Satoyasu teaches that a member (4, first susceptor) that has the barrel type susceptor disposed at the peripheral portion thereof and surfaces each of which is oppositely disposed tilting in a same direction (see Drawing 1) as each of the surfaces of the barrel type susceptor for the purpose of eliminating the influence of convection of a raw material distribution of film thickness and composition of a growth film on the inside surface (Abstract, purpose and constitution).

Thus, it would have been obvious to one of ordinary skill in the art at the time applicant's claimed invention was made to have provided a member that has the barrel type susceptor disposed at the peripheral portion thereof and surfaces each of which is oppositely disposed tilting in a same direction as each of the surfaces of the barrel type susceptor in Kong et al in order to eliminating the influence of convection of a raw material distribution of film thickness and composition of a growth film on the inside surface as taught by Satoyasu.

Regarding Claim 13, Referring to Fig (1, 2, 6, 7) Kong et al teach that each of surfaces on a side of the barrel type susceptor of the member allows placing a plurality of substrates (see Fig. 2, plurality of wafer pockets 44 for holding the substrates, 56, wafer pockets in Fig.7 and Fig.1 shows disc shaped wafers (27)).

Regarding Claim 14, Referring to Fig (2) Berkman et al teach that either one or both of the barrel type susceptor and the member are a heater (46) (Col. 4, Line 59-61).

Regarding Claim 15, Referring to Fig (2, 4, 6, 7) Berkman et al teach that the susceptor is made of a base material containing graphite (Col. 6, Line 10-24).

Regarding Claim 16, Referring to Fig (2, 4, 6, 7) Berkman et al teach that the susceptor is covered with polycrystalline silicon carbide or polycrystalline tantalum carbide (Col. 6, Line 10-24).

Claims 7-10, 12-15, are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No: 4,099,041 to Berkman et al in view of Japanese Patent No: 03-131017 to Satoyasu.

Regarding Claim 7, Referring to Fig (1-4) Berkman et al teach a susceptor (10) that is

Art Unit: 1763

used in semiconductor epitaxial growth, comprising: a barrel type susceptor (10) having a plurality of surfaces (15-21) on an outer side of each of which a plurality of substrates (14) is freely disposed; and a member (24) that has the barrel type susceptor disposed inside thereof (Col. 2, Line 12-33).

But Kong et al fail to teach that a member that has the barrel type susceptor disposed inside thereof and surfaces each of which is oppositely disposed tilting in a same direction as each of the surfaces of the barrel type susceptor.

However, Satoyasu teaches that a member (8b, second susceptor) that has the barrel type susceptor disposed inside thereof and surfaces each of which is oppositely disposed tilting in a same direction (see Drawing 1) as each of the surfaces of the barrel type susceptor for the purpose of eliminating the influence of convection of a raw material distribution of film thickness and composition of a growth film on the inside surface (Abstract, purpose and constitution).

Thus, it would have been obvious to one of ordinary skill in the art at the time applicant's claimed invention was made to have provided a member that has the barrel type susceptor disposed inside thereof and surfaces each of which is oppositely disposed tilting in a same direction as each of the surfaces of the barrel type susceptor in Kong et al in order to eliminating the influence of convection of a raw material distribution of film thickness and composition of a growth film on the inside surface as taught by Satoyasu.

Regarding Claim 8, Referring to Fig (1-4) Berkman et al teach that each of surfaces on a side of the barrel type susceptor of the member allows placing a plurality of substrates (14) (Fig.2).

Regarding Claim 9, Referring to Fig (1-4) Berkman et al teach that either one or both of the barrel type susceptor and the member are a heater (Col. 2, Line 59-61).

Regarding Claim 10, Referring to Fig (1-4) Berkman et al teach that the susceptor is made of a base material containing graphite (Col. 2, Line 20-22).

Regarding Claim 12, Referring to Fig (1-4) Berkman et al teach a susceptor (10) that is used in semiconductor epitaxial growth, comprising: a barrel type susceptor (10) having a plurality of surfaces (24) on an inner side of each of which a plurality of substrates (14) is freely disposed; and a member (15-21) that has the barrel type susceptor disposed at the peripheral portion thereof (Col. 2, Line 12-33).

But Kong et al fail to teach that a member that has the barrel type susceptor disposed at the peripheral portion thereof and surfaces each of which is oppositely disposed tilting in a same direction as each of the surfaces of the barrel type susceptor.

However, Satoyasu teaches that a member (4, first susceptor) that has the barrel type susceptor disposed at the peripheral portion thereof and surfaces each of which is oppositely disposed tilting in a same direction (see Drawing 1) as each of the surfaces of the barrel type susceptor for the purpose of eliminating the influence of convection of a raw material distribution of film thickness and composition of a growth film on the inside surface (Abstract, purpose and constitution).

Thus, it would have been obvious to one of ordinary skill in the art at the time applicant's claimed invention was made to have provided a member that has the barrel type susceptor disposed at the peripheral portion thereof and surfaces each of which is oppositely disposed tilting in a same direction as each of the surfaces of the barrel type susceptor in Kong et al in

Art Unit: 1763

order to eliminating the influence of convection of a raw material distribution of film thickness and composition of a growth film on the inside surface as taught by Satoyasu.

Regarding Claim 13, Referring to Fig (1-4) Berkman et al teach that each of surfaces on a side of the barrel type susceptor of the member allows placing a plurality of substrates (14) (Fig.Fig.2).

Regarding Claim 14, Referring to Fig (1-4) Berkman et al teach that either one or both of the barrel type susceptor and the member are a heater (Col. 2, Line 59-61).

Regarding Claim 15, Referring to Fig (1-4) Berkman et al teach that the susceptor is made of a base material containing graphite (Col. 2, Line 20-22).

Conclusion

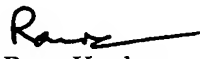
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Viji N. Bernard whose telephone number is 571-272-6425. The examiner can normally be reached on Mon-Fri 8:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Parviz Hassanzadeh can be reached on 571-272-1435. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 1763

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Viji Bernard
Examiner
Art Unit 1763


Ram Kackar
Primary Examiner
Art Unit 1763